

EARLY SURVIVAL OF LOBLOLLY PLANTINGS ON ERODED LANDS

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Studies in north Mississippi during 1949-58 show that first-year survival is a good indicator of the success attained in establishing loblolly pine on a wide range of eroded sites.

First-, second-, and third-year survival were recorded for 25,000 seedlings in 47 study installations on barren gullies with exposed compact sandy-clay Coastal Plain parent materials; in abandoned fields with a herbaceous cover, mainly of broomsedge; and under deadened hardwoods.

As table 1 indicates, losses during the first year averaged 19 percent. Second- and third-year losses combined averaged 6 percent and ranged from 2 percent on gullies to 10 percent for conversion plantings. The data in the table are from both wet and dry years. Site averages are not strictly comparable because all sites were not planted every year.

TABLE 1.--Mortality of loblolly pine seedlings on eroded sites in north Mississippi.

Site	Seedlings planted	Average study mortality	
		First year	Second and third years
Gullies.....	3	Percent ¹ <u>12 ± 4</u>	Percent ¹ <u>2 ± 1</u>
Abandoned fields:			
Light-textured soils.....	7	25 ± 5	6 ± 2
Medium-textured soils.....	10	18 ± 4	5 ± 1
Hardwood conversion.....	5	16 ± 4	10 ± 3
Total or average.....	25	19 ± 2	6 ± 1

¹ Mean ± one standard error.

Drought was the leading cause of first-year mortality on all sites, taking its heaviest toll on sandy soils. The highest mortality in any one study plantation was 65 percent. Differences due to soils, however, were limited to the first year.

Mulching and planting in holes made with post-hole diggers increased first-year survival in gullies.¹ In one study, mulching alone increased initial survival 18 percent in a dry year and 7 percent in a year of favorable summer rainfall. Post-hole planting in two studies increased first-year survival approximately 10 percent and mulching combined with post-hole planting increased it 20 percent. These treatments also helped reduce losses during the second and third growing seasons.

¹ Ursic, S. J. Post-hole tree planting for stabilizing gullies. Jour. Soil and Water Conserv. 16: 188-189. 1961.

Absence of competing vegetation was advantageous during dry summers. In one study, first-year survival on bare parent materials averaged 78 percent, as compared with 40 percent on abandoned fields with a broomsedge cover and sandy or loessial soils.

On the whole, the survivals on eroded areas were somewhat higher than those usually achieved on such sites in general practice. Close supervision and care in planting probably contributed to this result.

Heavier-than-average losses in conversion plantings after the first year were due to falling debris from the deadened overstory and competition from hardwood sprouts.

The findings suggest that:

1. Decisions to replant or to accept a stand can be made at the end of the first growing season.
2. Treatments to improve survival should be aimed at increasing soil moisture during the first growing season.